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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,250	12/21/2001	Lonnie O. Ingram	BCI-001CPA2CN	9349

7590

02/04/2004

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EXAMINER

PRATS, FRANCISCO CHANDLER

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 02/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/027,250	Applicant(s) INGRAM ET AL.	
	Examiner Francisco C Prats	Art Unit 1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892). | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

The amendment filed November 26, 2003, has been received and entered. The text of those sections of Title 35, U.S. Code, not included in this action can be found in a prior office action.

Claims 1-26 are pending and are examined on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, the disclosure as filed lacks support for the new claim language in claims 1 and 26, "without pretreatment of said lignocellulose with an alcohol/sodium oxide or alkaline

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pretreatment." Applicant asserts that this new language finds support in Examples 1 and 4 in the specification. However, rather than using non-pretreated lignocellulosic material as asserted by applicant, Examples 1 and 4 use "MWOP", or mixed waste office paper. Note specifically that paper used in offices is generally highly refined, and contains little or no lignin, and would therefore not properly be termed "lignocellulose." See, e.g., Ferretti, U.S. Pat. 5,582,682, at column 2, lines 16-20, distinguishing between lignocellulosics and refined cellulosic products:

For clarity, cellulosics are divided into 3 recognizable categories: fibrous lignocellulosics (e.g., bagasse, wood, straw, stover, etc.), refined cellulosics (i.e., paper and paper-related byproducts), and delignified cellulose powder.

Therefore, because the MWOP used in Examples 1 and 4 has clearly been delignified by some process, Examples 1 and 4 cannot possibly provide inherent support for a process of using non-pretreated lignocellulosic material.

In sum, because the portions of the specification asserted by applicant as supporting the new language do not provide clear support for the new language, and because no other support, literal or inherent, is evident on the record, a holding of new matter is clearly required. This is a new matter rejection.

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Claim Rejections - 35 USC § 102

Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakao et al (Ann. N.Y. Acad. Sci. 613(Enzyme Engineering 10):802-807 (1990)).

Nakao discloses a process for increasing the extent of saccharification of lignocellulose, whereby lignocellulose is treated continuously with ultrasound at 20 kHz and a cellulase-containing microorganism, *Trichoderma viride*. Nakao therefore anticipates the cited claims.

Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Rolz (Biotech. Lett. 8(2):131-136 (1986)).

Rolz discloses a process for increasing the extent of saccharification of lignocellulose, whereby lignocellulose is treated continuously with ultrasound and cellulase. Nakao therefore anticipates the cited claims.

Claim Rejections - 35 USC § 103

Claims 1, 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakao et al (Ann. N.Y. Acad. Sci. 613(Enzyme Engineering 10):802-807 (1990)).

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As discussed immediately above, Nakao discloses the processes recited in claims 1 and 2. Nakao differs from the process recited in claim 5 in that Nakao does not apply the ultrasound discontinuously. However, the artisan of ordinary skill at the time of applicant's invention having before him the Nakao reference would have reasonably expected that the decision of whether to apply the ultrasonic irradiation continuously or discontinuously would have been a matter of design choice, either method being expected to function equivalently to the other. Thus, the recitation in claim 5, that the ultrasound be supplied discontinuously, would have been obvious to artisan of ordinary skill at the time of applicant's invention because the discontinuous ultrasound would have been considered equivalent to the continuous ultrasound used by Nakao.

Claims 7-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ingram et al (U.S. Pat. 5,424,202) in view of Nakao et al (Ann. N.Y. Acad. Sci. 613(Enzyme Engineering 10):802-807 (1990)) and Rolz (Biotech. Lett. 8(2):131-136 (1986)).

Ingram discloses the treatment of lignocellulosics, including wastepaper, using the claim-designated ethanologenic microorganisms. Ingram does not disclose the application of

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ultrasound to the lignocellulosic material, as recited in the claim. However, both Nakao and Rolz disclose that ultrasound treatment improves the saccharification of lignocellulose by cellulase. Thus, the artisan of ordinary skill at the time of applicant's invention would have been motivated by Nakao's and Rolz's disclosure, that lignocellulose saccharification processes can be improved by ultrasound treatment, to have modified the Ingram process by including the claimed ultrasound treatment. From the disclosures of the cited references, the artisan of ordinary skill would reasonably have expected that the ultrasound treatment would have improved the efficiency of the Ingram process. It is therefore respectfully submitted that the claimed process is properly considered prima facie obvious under § 103(a).

In sum, these claims fail to be patentably distinguishable over the state of the art discussed above and cited on the enclosed PTO-1449 and/or PTO-892. Therefore, the claims are properly rejected under 35 U.S.C. § 103.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by

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a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,333,181. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims recite processes which comprise all of the steps recited in the claims under examination. That is, although the patented claims recite additional process steps when compared to the claims under examination, all of the process steps recited in the claims under examination are contained within the processes recited in the patented claims. Thus, despite the difference in scope, the patented claims effectively anticipate the claims under examination.

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Response to Arguments

All of applicant's argument has been fully considered but is not persuasive of error. Applicant urges that neither Nakao nor Rolz anticipate the claims because the amendment now excludes alcohol/NaO pretreatments of the lignocellulose, and both of those references teach that alcohol/NaO or alkaline pretreatment is required to obtain the advantages of ultrasonic treatment of the lignocellulose. However, applicant's argument entirely ignores the fact that the references in fact unequivocally disclose contacting non-pretreated lignocellulose with ultrasound and a cellulase enzyme. This is all that the claims require. Because the references disclose a process containing every limitation required in the rejected claims, a holding of anticipation is clearly required, despite the new language in the claim.

In this regard note specifically that, as applicant is well aware, a "teaching away" is irrelevant in anticipation rejections. See, e.g., MPEP § 2131.05, citing *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998), for the proposition that:

A reference is no less anticipatory if, after disclosing the invention, the reference then

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disparages it. The question whether a reference "teaches away" from the invention is inapplicable to an anticipation analysis.

Thus, despite the asserted "teaching away" in these references, the anticipation rejections must be maintained.

With respect to the issue of obviousness, applicant urges that the Scherba and Earnshaw references demonstrate that ultrasonic radiation would have been expected to kill the ethanologenic microorganisms, and that therefore the artisan of ordinary skill would not have reasonably expected that the disclosure of Ingram could have been successfully combined with the disclosures of Nakao and Rolz. However, applicant's claims do not require that the organisms must be living, nor do applicant's claims exclude processes wherein the microorganisms are lysed by the ultrasound, releasing the enzymes thereby. Furthermore, applicant's claims encompass the use of any level of power, including those which would not be expected to kill microorganisms. Applicant's claims are simply not limited to applications of ultrasound at levels which would be expected to kill microorganisms.

Moreover, taken as a whole, it would appear that the Scherba et seq references suggest that ultrasound is not detrimental to all microorganisms. The entire disclosure of the

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Tiehm reference, also of record in this case, is clearly that, overall, ultrasound increases capability of microorganisms to degrade a substrate, sludge. Similarly, the Thomas and Dolganova references, also of record, disclose increases in the population of microorganisms by ultrasound. Thus, depending on which reference one looks to, one can in fact find a reasonable expectation of success.

For example, the artisan of ordinary skill clearly would not have expected ultrasound to have killed the cellulolytic microorganisms because Nakao's cellulase is in fact provided as an intact microorganism. See Nakao at p. 803. (□*Trichoderma viride* (Onozuka R-10) was supplied . . . **and was used without further purification.**□) (Emphasis added.) Thus, contrary to applicant's argument, the artisan of ordinary skill would not have expected Nakao's ultrasound treatment to have killed the microorganisms present in the hydrolysis milieu because Nakao explicitly discloses that such killing does not occur. The rejections under 103(a) must therefore be maintained.

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS**

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ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francisco C Prats whose telephone number is 571-272-0921. The examiner can normally be reached on Monday through Friday, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G Wityshyn can be reached on 571-272-0926. The fax phone number for the

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organization where this application or proceeding is assigned is
(703) 872-9306.

Any inquiry of a general nature or relating to the status
of this application or proceeding should be directed to the
receptionist whose telephone number is 703-308-0196.


Francisco C Prats
Primary Examiner
Art Unit 1651

FCP